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Evaluation of the Digitalization Policy for Rural and Urban Land and Building Tax Services in Cidahu District, Sukabumi Regency

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A R T I C L E I N F O

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A B S T R A C T

This study evaluates the digitalization of Rural and Urban Land and Building Tax (PBB-P2) services in Cidahu District, Sukabumi Regency, using Dunn's six policy evaluation criteria. A qualitative descriptive-evaluative approach involved 12 purposively selected informants. Data were collected through interviews, observation, and documentation. Fieldwork began in April 2026, while administrative records covered 2023–2025. Online payments among recorded paid tax objects increased from 28.7% in 2023 to 39.5% in 2025. Findings indicate that digitalization is fairly effective and efficient, with fairly good responsiveness; however, adequacy and equity remain constrained by limited digital literacy, unstable internet access, and geographical barriers. The study recommends hybrid service delivery combining digital and manual channels with public outreach and user assistance.

INTRODUCTION

Digital transformation has become an important part of public-sector reform, including the delivery of local government services. The use of digital platforms is expected to simplify administrative procedures, improve service accessibility, and support more efficient public-service delivery. In Indonesia, this direction is reflected in Presidential Regulation No. 95 of 2018 concerning the Electronic-Based Government System (SPBE), which provides a framework for integrating information technology into government administration. The implementation of digital public services must also consider the principles of public service delivery established under Law No. 25 of 2009 concerning Public Services. These regulations indicate that digitalization should not be understood merely as the introduction of technology, but as an effort to improve the quality and accessibility of government services.

One area affected by this transformation is the administration of Rural and Urban Land and Building Tax (Pajak Bumi dan Bangunan Perdesaan dan Perkotaan/PBB-P2), which is an important source of local tax revenue. The transfer of PBB-P2 administration to regional governments has strengthened the role of local governments in managing tax administration and improving regional fiscal capacity, as reflected in Law No. 1 of 2022 concerning Financial Relations between the Central Government and Regional Governments. Digital payment channels can provide taxpayers with more flexible access to tax information and payment services. However, the availability of online services does not automatically ensure that all taxpayers can use them effectively. Differences in digital literacy, internet connectivity, geographical conditions, access to devices, and established payment habits may influence the extent to which residents benefit from digital services.

Previous studies have examined digitalization in land and building tax services from several perspectives. Falah et al. (2024), for example, examined the service quality of the PBB Mobile application in Bogor Regency, while Arzita Elfito et al. (2024) discussed online-based innovation in PBB services. These studies provide useful insights into the convenience and service potential of digital tax platforms, while also drawing attention to challenges experienced by users who have limited familiarity with technology. Other studies have examined broader aspects of regional tax digitalization. Nisa & Tamrin (2025) discussed digital transformation and multi-level collaboration in regional tax data collection, while Puteri et al. (2025) examined the implementation of digital strategies in regional tax services in Banjarmasin. Simarmata & Thamrin (2025), meanwhile, focused on the effectiveness of a land and building tax revenue system in relation to regional revenue optimization.

Although these studies contribute to understanding digital tax services, their different research focuses leave room for further examination. Studies focusing on application quality, service innovation, tax data collection, or revenue systems do not necessarily provide a comprehensive evaluation of how digitalized PBB-P2 services perform across multiple public-policy dimensions at the subdistrict level. In particular, the practical relationship between digital service availability, residents' capacity to access the service, the continuing use

of manual channels, and the responsiveness of local service providers requires further attention. This issue is relevant in areas where residents have different levels of digital readiness and where geographical conditions may affect internet access.

This situation can also be observed in Cidahu District, Sukabumi Regency, where PBB-P2 services have increasingly made use of digital payment channels, including SmartGov Revenue and other available electronic payment options. Administrative records documented by the Regional Revenue Agency (Bapenda) of Sukabumi Regency show that the proportion of recorded PBB-P2 payment objects using online channels increased from 28.7% in 2023 to 38.3% in 2024 and 39.5% in 2025. These percentages refer to online payments as a share of recorded payment objects in each year, rather than all registered tax objects. The figures indicate growing use of digital channels, but they do not, by themselves, demonstrate that digitalization has caused an increase in total PBB-P2 revenue or that all residents have equal access to the service.

The continued use of manual payment channels and the assistance provided by local personnel indicate that the implementation of digital services needs to be examined in relation to actual user experiences. Residents who are familiar with digital technology may benefit from the convenience of online transactions, whereas others may still require direct assistance because of limited digital literacy, unstable internet connections, or geographical barriers. Consequently, evaluating digitalization only through the availability of platforms or the number of online transactions may provide an incomplete picture of policy performance.

To address this issue, the present study evaluates PBB-P2 service digitalization in Cidahu District using William N. Dunn's (2018) six policy evaluation criteria: effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness. Applying these six criteria enables the study to examine not only whether digital channels facilitate tax services, but also whether the services adequately address residents' needs, distribute access fairly, respond to user difficulties, and fit local conditions. The framework therefore provides a broader basis for assessing digitalization than an evaluation based solely on transaction growth or technological availability.

The research gap lies in the limited examination of PBB-P2 digitalization through an integrated policy-evaluation framework at the subdistrict level, particularly one that considers both digital and manual service experiences. The study's theoretical contribution is to apply Dunn's six criteria to examine the relationship between digital service performance and the social, organizational, and geographical conditions that shape access to local tax services. Its practical contribution is to identify factors supporting and constraining implementation and to formulate recommendations for service improvement based on the experiences of government personnel, tax collectors, and taxpayers.

Based on this background, this study aims to evaluate the digitalization of PBB-P2 services in Cidahu District, Sukabumi Regency, using Dunn's six policy evaluation criteria and to identify the supporting and inhibiting factors affecting service implementation. It also examines the implications of the findings for a

proposed hybrid service arrangement that coordinates digital payment channels with manual services and direct assistance. In this study, hybrid service delivery is presented as a recommendation derived from the evaluation findings, not as a formally established policy already implemented by the local government.

LITERATURE REVIEW

1. Digitalization of Public Services and Local Tax Administratiom

Digitalization in public administration refers to the use of information and communication technology to support government processes, improve service delivery, and facilitate public access to administrative services. In tax administration, digital channels can be used to provide tax information, facilitate payments, and reduce the need for taxpayers to visit government offices. Respati (2020) discusses the adoption of electronic government in tax administration as part of the broader development of technology-based public services. However, the adoption of digital systems also requires adjustments in administrative procedures and the capacity of service users to operate the available technology.

Digitalization should therefore be understood not only as the provision of technological infrastructure but also as a change in the relationship between public institutions and service users. Saprudin & Zulmasyhur (2024) discuss public service innovation through technology in relation to effectiveness, efficiency, accessibility, transparency, and participation. These dimensions indicate that the benefits of digital services depend on how well the technology is managed and how easily the public can access and use it. The availability of an online platform does not necessarily mean that every service user can independently complete the required procedures.

In the context of regional taxation, digitalization is expected to support more accessible and efficient PBB-P2 administration. Nevertheless, its implementation must take account of the institutional capacity of local governments and the circumstances of taxpayers. Digital services need to be supported by clear information, adequate assistance, and service procedures that can be understood by different groups of users. Accordingly, the evaluation of PBB-P2 digitalization needs to consider both the performance of the digital channel and the conditions that influence its actual use.

2. Previous Empirical Studies on Digital Tax Services

Previous studies have examined digitalization in tax services from different perspectives. Falah et al. (2024), in their study of the PBB Mobile application in Bogor Regency, focused on the quality of application-based PBB services. Their research reported generally positive service-quality assessments, although some application features still required improvement. This study provides insight into the performance of digital tax applications, particularly from the perspective of service quality.

Arzita Elfito et al. (2024) examined online-based innovation in PBB services. Their study highlighted the convenience offered by digital services, including easier access to and storage of tax documents. However, it also identified difficulties for older residents and people who were less familiar with technology. These findings indicate that digital service innovation needs to be

accompanied by assistance and alternative service arrangements for users who experience difficulties.

Puteri et al. (2025) examined digital strategies in regional tax services in Banjarmasin. Their research highlights the potential of digitalization to improve service efficiency and convenience, while also identifying challenges associated with digital literacy, internet connectivity, and public outreach. In a broader regional tax-administration context, Nisa & Tamrin (2025) emphasized the role of digital transformation and collaboration among levels of local government in regional tax data collection. Their study demonstrates that digital transformation involves not only technological systems but also coordination among government institutions.

Other studies have addressed the relationship between digital transformation and regional financial administration. Marpaung & Patriansyah (2025) examined digital transformation and smart governance in relation to the efficiency and accountability of regional government finances. Simarmata & Thamrin (2025) meanwhile, focused on the effectiveness of the PBB revenue system in optimizing regional original revenue. These studies contribute to understanding the administrative and fiscal dimensions of regional tax management.

Taken together, the previous studies demonstrate that digitalization can support service convenience, administrative efficiency, and improvements in tax management. However, their research focuses differ, including application quality, service innovation, tax data collection, digital governance, and revenue-system performance. The present study complements this body of research by evaluating PBB-P2 service digitalization through six policy evaluation criteria and by examining the experiences of government personnel, field-level service actors, and taxpayers. This focus makes it possible to assess not only the benefits of digital services but also the adequacy and fairness of access in a subdistrict context.

3. Policy Evaluation Using Dunn's Six Criteria

Policy evaluation is an important process for examining the performance and consequences of public policies. Dunn (2018) presents policy evaluation as a multidimensional assessment that considers whether a policy achieves its objectives, uses resources appropriately, addresses existing problems, distributes benefits fairly, responds to public needs, and fits the context in which it is implemented. This approach is relevant to digital public services because the success of a digital platform cannot be determined solely by the availability of technology or the number of transactions conducted online.

This study applies Dunn's six evaluation criteria as follows:

A. Effectiveness

Effectiveness concerns the extent to which a policy achieves its intended objectives. In this study, it is used to examine whether PBB-P2 digitalization facilitates access to tax information and enables taxpayers to complete payment through digital channels. The assessment also

considers the extent to which the service can be used by the intended community.

B. Efficiency

Efficiency refers to the relationship between the resources used and the benefits obtained from policy implementation. In the context of PBB-P2 services, this criterion concerns the time, effort, and administrative procedures required to complete tax-related transactions. Digital services may reduce the need for physical visits, although the actual efficiency experienced by taxpayers may depend on their ability to use the technology and the reliability of internet access.

C. Adequacy

Adequacy examines whether a policy provides a sufficient response to the problem it is intended to address. This criterion is applied to determine whether digitalization has adequately addressed difficulties in PBB-P2 service delivery. The assessment includes the availability of digital channels, the need for assistance, and barriers that may prevent residents from completing online transactions.

D. Equity

Equity concerns the fairness of the distribution of policy benefits and access among different groups. In this study, it is used to assess whether taxpayers have comparable opportunities to access PBB-P2 services. Differences in digital literacy, device availability, internet connectivity, geographical conditions, and service preferences are considered when examining the distribution of digital-service benefits.

E. Responsiveness

Responsiveness refers to the extent to which policy implementation addresses the needs, preferences, and difficulties experienced by the public. In PBB-P2 services, this criterion examines how government personnel and field-level service actors respond to taxpayers who require information, guidance, or assistance. It also considers whether service arrangements provide adequate responses to users who cannot independently access digital channels.

F. Appropriateness

Appropriateness concerns whether a policy is suitable for the problems, needs, and circumstances of the community. This criterion is used to examine whether digitalization is an appropriate approach to improving PBB-P2 services in Cidahu District. The assessment considers both the potential benefits of digital channels and the local conditions that make manual services and direct assistance necessary.

The six criteria are interconnected and should not be interpreted as isolated measures. For example, a digital service may be efficient for residents who are familiar with technology but may not be adequate or equitable for those with limited digital access. Similarly, the availability of assistance may improve responsiveness and make the service more appropriate for local circumstances. Therefore, applying all six criteria provides a broader basis for evaluating the performance of PBB-P2 digitalization Dunn (2018). This multidimensional

perspective is also consistent with policy evaluation studies that emphasize examining implementation performance beyond a single service outcome (Riisyie Rantung et al., 2025; Sifa Sulisthiawati et al., 2025)

4. Digital Access and Hybrid Service Delivery

Access to digital public services is influenced by several interconnected conditions. The availability of an online platform is only one part of the service process; users also need sufficient digital skills, access to suitable devices, reliable internet connectivity, and understandable service information. Arzita Elfito et al. (2024) show that online PBB services can provide convenience while creating difficulties for residents who are less familiar with technology. In areas with varying geographical and network conditions, these challenges may further influence the practical accessibility of digital services.

The capacity of service providers is also important. Saprudin & Sari (2025) associate information-system-based public service quality with responsiveness, complaint handling, coordination, and operator readiness. This suggests that the quality of digital public services depends not only on the technological platform but also on the ability of public institutions and their personnel to guide users and respond to service difficulties.

In this study, hybrid service delivery refers to a proposed arrangement that coordinates digital payment channels with manual services and direct assistance. The concept is based on the understanding that residents have different levels of digital readiness and do not experience the same access conditions. Digital channels can provide convenience for residents who are able to use them independently, while manual services and assistance can remain available to residents who encounter technological, connectivity, or geographical barriers.

The proposed hybrid arrangement is not treated as a formally adopted policy in Cidahu District. Rather, it is considered a possible service improvement based on the evaluation findings. Its rationale is connected to Dunn's criteria: digital channels may support effectiveness and efficiency; maintaining alternative access can improve adequacy and equity; assistance from service personnel can strengthen responsiveness; and coordination between digital and manual channels can improve the appropriateness of service delivery within local conditions.

Based on this theoretical discussion, the study uses Dunn's six criteria to evaluate PBB-P2 digitalization, while considering digital literacy, internet connectivity, geographical conditions, service habits, and institutional assistance as factors that influence implementation. The evaluation results provide the basis for formulating recommendations for a coordinated hybrid service arrangement that responds to the needs and circumstances of taxpayers in Cidahu District.

METHODOLOGY

1. Research Design and Location

This study employed a qualitative descriptive-evaluative approach to examine the digitalization of Rural and Urban Land and Building Tax (PBB-P2) services in Cidahu District, Sukabumi Regency, West Java, Indonesia. A

qualitative approach was selected to obtain an in-depth understanding of policy implementation, service experiences, and factors influencing the use of digital and manual payment channels. The evaluation was guided by Dunn (2018) six policy evaluation criteria: effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness.

Field data collection began in April 2026. The research focused on PBB-P2 services at the district level, including the roles of regional tax authorities, district and village officials, tax collectors, and taxpayers. In addition to interview and observation data, administrative records covering the 2023–2025 period were examined to describe the development of online PBB-P2 payments.

2. Informants and Sampling Technique

Informants were selected using purposive sampling, based on their knowledge, experience, and direct involvement in PBB-P2 administration or services in Cidahu District. The study involved 12 informants consisting of one regional coordinator from the Regional Revenue Agency (Bapenda), one district head, one district staff member responsible for PBB services, three village government officials, two PBB tax collectors, and four taxpayers.

The selection of informants was intended to obtain perspectives from different parties involved in the service process, including policy administration, service implementation, collection activities, and taxpayer experiences. These informant groups provided complementary information regarding the use of digital services, the continuation of manual services, and the factors supporting or hindering service accessibility.

3. Data Collection Techniques

Data were collected through semi-structured interviews, direct observation, and documentation. Semi-structured interviews were conducted with the selected informants to explore their experiences, perceptions, and assessments of PBB-P2 digitalization. The interview questions were organized around Dunn's six evaluation criteria while allowing informants to provide additional explanations based on their experiences.

Direct observation was conducted to examine the PBB-P2 service process, the use of digital payment channels, interactions between service providers and taxpayers, and the availability of supporting facilities. Documentation was used to complement the field findings, particularly administrative data on PBB-P2 payments during 2023–2025 and relevant documents concerning regional tax administration and digital public services.

4. Data Analysis and Data Credibility

Data analysis followed the interactive model of Miles et al. (2014), consisting of data condensation, data display, and conclusion drawing and verification. Data condensation involved selecting and organizing information relevant to the research objectives. Data were then displayed descriptively and grouped according to Dunn's six policy evaluation criteria. Conclusions were drawn by interpreting the patterns of findings and verifying them against the collected evidence.

Data credibility was strengthened through triangulation of sources, techniques, and time. Source triangulation involved comparing information obtained from Bapenda representatives, district and village officials, tax collectors, and taxpayers. Technique triangulation was conducted by comparing interview findings with direct observations and documentary evidence. Time triangulation involved checking information collected at different times to assess the consistency of the findings.

The online payment percentages were interpreted as the proportion of recorded paid tax objects using online channels, rather than the proportion of all registered tax objects.

RESEARCH RESULT

1. Development of Online and Manual PBB-P2 Payments

Administrative records obtained from the SmartGov Revenue system of the Regional Revenue Agency (Bapenda) of Sukabumi Regency indicate an increase in the use of online payment channels between 2023 and 2025. However, manual payments remained the dominant channel throughout the period.

Table 1. Development of Online and Manual PBB-P2 Payments in Cidahu District, 2023--2025

Year	Registered Tax Objects	Manual Payments	Objects recorded through online Payments	Online Share of Paid objects
2023	26.657	10.609	4.271	28.7%
2024	26.777	10.235	6.354	38.3%
2025	26.927	10.040	6.556	39.5%

Source: SmartGov Revenue, Bapenda Sukabumi Regency, processed by the researcher.

The data show that online payments increased from 4,271 tax objects in 2023 to 6,556 in 2025. The proportion of online payments among paid tax objects also increased from 28.7% to 39.5%, representing an increase of 10.8 percentage points. Nevertheless, manual payments remained higher, accounting for 60.5% of paid tax objects in 2025.

These figures represent the proportion of recorded paid tax objects using online channels, rather than the proportion of all registered tax objects. The data therefore illustrate the development of digital-channel utilization and the continued coexistence of online and manual payment services.

The interview findings also indicate that online and manual payment channels continue to operate side by side. Some taxpayers have begun using online payment services and, in certain cases, assist other residents in completing digital transactions. Meanwhile, other taxpayers continue to prefer manual payments because they are more familiar with the procedure or require direct assistance. This pattern indicates that digitalization in Cidahu is developing gradually rather than replacing conventional services entirely.

2. Evaluation of PBB-P2 Service Digitalization Based on Dunn's Criteria

The evaluation of PBB-P2 service digitalization was organized according to William N. Dunn's six policy evaluation criteria: effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness. The findings were obtained by comparing information from Bapenda representatives, district and village officials, tax collectors, and taxpayers with observations and administrative documentation.

Table 2. Summary of PBB-P2 Digitalization Evaluation Based on Dunn's Criteria

Evaluation criterion	Main findings	Assessment
Effectiveness	Digital services facilitate payment and information access for users who can operate the available channels, but manual payments remain dominant.	Fairly effective
Efficiency	Online payments can reduce time and effort, although the benefits depend on digital skills and network availability.	Fairly efficient
Adequacy	Digitalization has not fully addressed digital literacy, connectivity, and assistance needs.	Not yet optimal
Equity	Access varies according to digital skills, device availability, internet connectivity, and geographical conditions.	Not yet optimal
Responsiveness	Public officials and field personnel continue to provide information and assistance to taxpayers.	Fairly good
Appropriateness	Digitalization is consistent with service modernization, but local conditions support maintaining digital and manual channels together.	Appropriate with considerations

A. Effectiveness

The findings indicate that digitalization has improved the convenience of PBB-P2 services for taxpayers who are able to access and understand digital payment procedures. Online channels provide an alternative to conventional payment processes and allow users to complete transactions without relying entirely on direct contact with field collectors.

However, the effectiveness of digitalization has not been experienced equally by all taxpayers. Administrative records show that the proportion of online payments reached 39.5% of paid tax objects in 2025, while manual payments still accounted for 60.5%. This indicates that the digital channel has become increasingly utilized but has not yet become the main payment method.

From Dunn's perspective (2018), effectiveness concerns the extent to which a policy achieves its intended objectives. In this case, digitalization has achieved part of its objective by providing a more convenient payment alternative. Nevertheless, the continued reliance on manual services suggests that the benefits have not reached all groups of taxpayers equally. Digitalization can therefore be assessed as fairly effective, but its effectiveness remains partial.

B. Efficiency

Online payment services offer potential efficiency benefits by reducing the time and effort required to complete tax payments. Taxpayers who understand the digital procedure can make payments without having to wait for direct collection or visit a particular service point. This is particularly beneficial for residents who have access to suitable devices and stable internet connections.

Nevertheless, efficiency depends on the user's ability to operate the service. Taxpayers who are unfamiliar with digital technology may require assistance from family members, village officials, or other people who understand the payment process. In areas with unstable internet connectivity, completing an online transaction may also become difficult.

These findings show that technical efficiency does not automatically translate into experienced efficiency for every user. A digital process may reduce administrative steps, but it can still require additional effort from taxpayers who need guidance or face connectivity problems. Accordingly, digitalization in Cidahu can be considered fairly efficient, although its benefits remain dependent on user readiness and supporting infrastructure.

C. Adequacy

The adequacy criterion examines whether a policy is sufficient to address the problems it is intended to solve. In this study, digitalization provides an alternative to conventional PBB-P2 services and helps simplify payment access for some taxpayers. However, it has not fully resolved the practical barriers experienced by residents.

The findings identify limited digital literacy, unstable internet connectivity in certain areas, and the need for direct assistance as continuing challenges. Some taxpayers are not yet confident in completing digital transactions independently. Others continue to use manual services because they are more familiar with the existing procedure.

Geographical conditions also influence the adequacy of digital services. Residents in areas with less reliable internet access may not receive the same practical benefits as residents in locations with better connectivity. Therefore, the availability of online payment channels alone is insufficient to address all service-access problems.

The evaluation suggests that digitalization has addressed some aspects of PBB-P2 service delivery but has not yet provided a comprehensive solution. In line with Dunn's (2018) criterion of adequacy, the policy requires additional support through public education, user assistance, and improvements in access to supporting infrastructure.

D. Equity

The equity criterion concerns the distribution of policy benefits and the extent to which different groups can access public services. The findings indicate that the opportunity to use digital PBB-P2 services is influenced by differences in digital skills, device availability, internet connectivity, geographical conditions, and established payment habits.

Taxpayers who are familiar with digital technology can benefit from the convenience of online payments. In contrast, residents with limited digital skills or unreliable internet access may continue to depend on manual payment channels or assistance from other people. Consequently, the same digital service does not necessarily provide equal practical access to every taxpayer.

This finding is important because the availability of a digital platform should not be interpreted as proof that the service is equally accessible. Equity requires attention to the different circumstances of service users. Maintaining manual services during the transition is therefore important to prevent residents who face digital barriers from being excluded from PBB-P2 services.

The evaluation indicates that equity remains one of the areas requiring improvement. Digitalization needs to be accompanied by accessible information, assistance for taxpayers who experience difficulties, and alternative service channels that accommodate different levels of digital readiness.

E. Responsiveness

The responsiveness criterion examines how public service providers respond to citizens' needs, complaints, and difficulties. The findings show that the role of public officials and field personnel remains important in the delivery of PBB-P2 services in Cidahu.

District and village personnel, together with PBB tax collectors, continue to provide information and assistance to taxpayers who experience difficulties in understanding payment procedures. Their

involvement helps connect digital service channels with residents who are not yet able to use them independently.

The findings also indicate that some taxpayers who are already familiar with online payments help other residents complete digital transactions. This form of assistance reflects community-level support, although it should be distinguished from the formal responsibilities of government service providers.

The continued availability of assistance and manual services indicates that the service arrangement has not required all taxpayers to immediately adopt digital payment methods. This reflects a fairly good level of responsiveness because service delivery continues to accommodate different user needs. Nevertheless, institutional support and clearer assistance procedures remain necessary to ensure that taxpayers receive consistent guidance.

F. Appropriateness

The appropriateness criterion assesses whether a policy is suitable for the problems being addressed and the conditions in which it is implemented. Digitalization is relevant to the modernization of local tax administration because it provides alternative payment channels and supports more convenient public services.

However, the findings show that the characteristics of Cidahu District require a gradual approach. Differences in digital literacy, internet connectivity, geographical conditions, and taxpayer preferences mean that a fully digital service arrangement would not yet accommodate all residents.

For this reason, digitalization is considered appropriate as a service modernization initiative, but replacing manual services entirely would not be suitable under the current conditions. A hybrid service arrangement, combining online payment channels with manual services and direct assistance, is more consistent with the needs of the local population.

This assessment does not mean that manual services should replace digital innovation. Rather, digital and manual channels need to complement each other during the transition. Such an approach allows the government to continue developing digital services while maintaining access for taxpayers who still require conventional assistance.

3. Supporting and Inhibiting Factors

Supporting factors	Inhibiting factors
Digital service and payment channels are available.	Digital literacy varies across residents.
Officials and field personnel support service delivery.	Internet connectivity is not consistently reliable.
Some residents are able to use digital tools.	Some residents remain more accustomed to manual service.

Manual service and direct assistance remain available.	Geographical conditions and different levels of access complicate use.

The Bapenda perspective emphasizes the availability of digital channels as an additional way to provide information and receive payments, while recognizing that the channel is not yet used by every resident. From the taxpayer perspective, digital payment is perceived as more practical and can save time and effort after the user understands the process. The village-level/field perspective highlights differences in residents' capabilities and the continued need to explain procedures, guide users, and help them access the service.

DISCUSSION

The findings of this study indicate that the digitalization of Rural and Urban Land and Building Tax (PBB-P2) services in Cidahu District has provided an alternative mechanism for taxpayers to access and complete their tax payments. The proportion of online payments increased from 28.7% in 2023 to 39.5% in 2025, indicating a gradual increase in the use of digital payment channels. Nevertheless, manual payments continued to account for the larger share of recorded paid tax objects. This condition demonstrates that the implementation of digital services has not entirely replaced conventional service procedures. Instead, digital and manual channels continue to operate alongside one another to accommodate differences in taxpayers' technological capabilities and access conditions.

This finding can be understood through Dunn's (2018) policy evaluation framework, which emphasizes that policy performance should be assessed through several interrelated criteria rather than a single measure. The six criteria—effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness—provide a comprehensive perspective for examining whether a policy achieves its objectives, addresses public needs, distributes benefits fairly, and corresponds to the circumstances of its target groups. In the context of Cidahu District, these criteria reveal that digitalization has generated practical benefits, although its implementation still faces limitations related to digital literacy, internet connectivity, geographical conditions, and the availability of assistance.

In terms of effectiveness, digitalization has facilitated PBB-P2 payments, particularly for taxpayers who have access to internet services and are familiar with digital transactions. The increasing proportion of online payments suggests that digital channels are gradually being adopted by the community. However, the fact that manual payments remain more widely used indicates that the benefits of digitalization have not yet reached all taxpayers equally. Therefore, the effectiveness of digital PBB-P2 services can be considered fairly achieved, but its implementation has not been fully effective in reaching the entire target community. This finding is consistent with Falah et al. (2024) whose study of the PBB Mobile application in Bogor Regency found that application-based tax services had generally positive service quality, while some aspects still required improvement. The comparison suggests that the availability of digital tax

applications is an important step in service modernization, but the quality and accessibility of their implementation remain essential to achieving broader effectiveness.

Regarding efficiency, online payment services provide practical advantages by reducing the need for taxpayers to travel to conventional payment locations and by allowing transactions to be completed through digital devices. These advantages can reduce the time and effort required to access services, particularly for taxpayers who are already capable of using digital platforms. However, efficiency is not experienced uniformly. Taxpayers with limited digital knowledge or unstable internet connections may need additional guidance before completing transactions. In such circumstances, manual payment procedures may be considered more convenient. This finding supports the argument of Saprudin & Zulmasyhur (2024) that technology-based public service innovation can improve efficiency and accessibility, but its benefits remain influenced by institutional readiness, infrastructure, and the characteristics of the community served. Thus, the efficiency of digital PBB-P2 services should be assessed not only through the speed of the transaction but also through the actual effort required by different groups of service users.

The adequacy criterion highlights whether digitalization is sufficient to address the problems and needs experienced by taxpayers. The findings show that online payment facilities have provided an additional option, but they have not fully resolved the difficulties faced by people with limited digital literacy and internet access. Some taxpayers still require assistance in understanding payment procedures and using digital facilities. These conditions indicate that providing an online payment channel alone is insufficient to address all service-related problems. Similar challenges were identified by Puteri et al. (2025) in their study of digital strategies in regional tax services in Banjarmasin. Their findings identified limited digital literacy, uneven internet access, insufficient socialization, and difficulties with system usability as obstacles to the adoption of digital tax services. The similarity between these findings and the conditions in Cidahu demonstrates that the adequacy of digital public services depends not only on technological availability but also on supporting measures that enable the community to use those services effectively.

In terms of equity, the study reveals differences in taxpayers' opportunities to access and benefit from digital services. Internet availability, access to digital devices, individual capabilities, and geographical conditions influence whether taxpayers can independently use online payment channels. Taxpayers living in areas with more reliable internet connections may experience greater convenience, while those in areas with limited connectivity may continue to depend on manual procedures or assistance from other people. Consequently, the benefits of digitalization have not been distributed evenly across all groups. This condition reinforces the importance of considering social and geographical differences in digital public service implementation. Puteri et al. (2025) similarly emphasize that unequal internet access and differences in digital literacy can limit the inclusiveness of digital tax services. Therefore, maintaining accessible manual services during the development of digital channels is important to

prevent technological transformation from creating additional barriers for certain groups of taxpayers.

The responsiveness criterion demonstrates the importance of public officials and local service actors in responding to taxpayers' difficulties and service needs. In Cidahu District, assistance from district and village personnel, as well as PBB tax collectors, helps taxpayers who experience difficulties understanding or completing digital payment procedures. In addition, some taxpayers who are already familiar with online payments have begun assisting other community members. These practices indicate that support from both public service actors and the community contributes to the adoption of digital services. However, assistance provided informally by fellow taxpayers should be distinguished from institutional responsibility. Sustainable responsiveness requires consistent information, accessible assistance, and clear mechanisms for handling service-related questions and complaints. This finding is in line with Saprudin & Sari (2025), who emphasize that the responsiveness of information-system-based public services is associated with the ability of service providers to address complaints, resolve problems, coordinate across institutions, and ensure the readiness of system operators. Thus, the responsiveness of digital PBB-P2 services depends not only on the availability of technology but also on the quality of human interaction and institutional support.

The appropriateness criterion concerns whether digitalization is suitable for the needs and circumstances of the community. The implementation of digital PBB-P2 services is relevant to the broader transformation of public administration and the development of technology-based public services. However, the findings indicate that a fully digital service arrangement would not yet adequately accommodate all taxpayers in Cidahu District. Differences in digital literacy, internet connectivity, and geographical conditions mean that taxpayers do not have the same level of readiness to use online services. Consequently, a service arrangement that combines digital and manual channels is more appropriate to the local context. This interpretation is supported by Saprudin & Zulmasyhur (2024), who highlight the importance of adapting public service innovation to local conditions and community characteristics. It is also consistent with Puteri et al. (2025), whose research identifies the continued importance of manual services in supporting the transition toward more inclusive digital tax services. Accordingly, hybrid service delivery is proposed as a recommendation for improving PBB-P2 services in Cidahu District, rather than being presented as a formally established policy.

The findings also highlight the importance of coordination among government institutions and local actors in supporting digital tax services. Nisa & Tamrin (2025), in their study of digital transformation and multi-level collaboration in regional tax data collection, demonstrate the relevance of cooperation between regional revenue agencies, sub-district governments, village administrations, and local officials. Their research emphasizes that digital transformation is not merely a technological process but also requires institutional coordination and adequate human resource capacity. This perspective is relevant to Cidahu District, where district and village personnel,

tax collectors, and taxpayers have complementary roles in facilitating access to PBB-P2 services. The involvement of these actors can help disseminate information, provide assistance, and address difficulties experienced by taxpayers. Therefore, strengthening coordination across local administrative levels is an important consideration in improving the implementation of digital services.

Furthermore, the findings are consistent with the broader discussion of digital public service innovation presented by Saprudin & Zulmasyhur (2024). Their study emphasizes the potential of technology-based innovation to improve effectiveness, efficiency, accessibility, transparency, and public participation. Nevertheless, the experience in Cidahu District shows that these potential benefits depend on the ability of public institutions to adapt technological innovation to the actual conditions of service users. Digitalization should therefore not be understood simply as the introduction of an online payment platform. It also involves improving public understanding, strengthening the capacity of service personnel, ensuring the availability of supporting infrastructure, and maintaining alternative access for people who are not yet able to use digital services independently.

Overall, the evaluation using Dunn's six criteria indicates that digitalization has provided meaningful benefits to PBB-P2 services in Cidahu District, particularly in facilitating transactions and offering taxpayers an alternative payment channel. However, the findings also show that adequacy and equity remain the main areas requiring improvement. These limitations demonstrate that the success of digital public services cannot be determined solely by the availability of technology or the increase in online transactions. It must also be assessed through the extent to which services can respond to public needs and provide accessible opportunities for different groups of users. Therefore, the development of PBB-P2 services should be directed toward an inclusive approach that strengthens digital channels while maintaining manual services, supported by continuous public outreach, practical assistance, improved internet access, and coordination among relevant local institutions.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that the digitalization of Rural and Urban Land and Building Tax (PBB-P2) services in Cidahu District has provided an alternative for taxpayers to access tax information and make payments. The proportion of online payments increased from 28.7% in 2023 to 39.5% in 2025, although manual payments remained dominant at 60.5%. Based on Dunn's six evaluation criteria, digitalization is fairly effective and efficient, with fairly good responsiveness. However, adequacy and equity remain constrained by limited digital literacy, unstable internet connectivity, and geographical barriers. These findings indicate that digital services alone cannot accommodate all taxpayers' needs, making the combination of digital and manual services a relevant approach to improving service accessibility and quality.

Therefore, local government and relevant tax authorities should strengthen public education, improve assistance for taxpayers with limited digital skills, and

enhance internet accessibility, particularly in areas with connectivity problems. Coordination among government officials, village representatives, and field personnel should also be strengthened to ensure that taxpayers receive adequate information and support. Manual payment services should remain available as an alternative to prevent the exclusion of taxpayers who face technological or geographical barriers. Future research is recommended to examine digital tax service implementation in other regions, particularly in relation to digital literacy, user satisfaction, and service accessibility.

ADVANCED RESEARCH

This study is limited to one district and uses qualitative evidence; therefore, its findings cannot be statistically generalized to other regions. Future research could compare several districts and further examine digital literacy, internet accessibility, user satisfaction, and differences in access to digital PBB-P2 services across geographical areas.

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